

# Design Mobile Application for Health Consultation During Pandemic Covid19

Rudi Setiawan<sup>1</sup>, Zainul Kisman<sup>2</sup>, Umar Al Faruq<sup>3</sup>, Qassandra Chaidir<sup>4</sup>

<sup>1</sup>Trilogi University, Indonesia, rudi@trilogi.ac.id

<sup>2</sup>Trilogi University, Indonesia, zainulkisman@trilogi.ac.id

<sup>3</sup>Trilogi University, Indonesia, faruq@trilogi.ac.id

<sup>4</sup>Trilogi University, Indonesia, qassiechaidir@gmail.com

## ABSTRACT

In the era of pandemic covid-19, many people have been exposed to this virus, now personal and environmental hygiene is a top priority for most people, all activities can't run normally, social distancing becomes mandatory and do not go out of the house up to work from home, all was done to maintain their health and safety. Along with the many activities carried out from home during pandemic covid-19, the use of internet connections to be able to stay connected to the outside world whether it's for work, shopping, learning has increased dramatically so the role of information technology to be very necessary at this time. Seeing the conditions that occur at this time, where the level of concern for life safety is very high, we propose a system that can make it easier for people to access health services in the form of online consultations with doctor's specialist, access information about health up to purchase of medicines and health equipment. Later in the presence of this mobile application, it is expected to make it easier for the public to reach access to health services without any worries, because they don't need to leave the house and touch physically except in urgent conditions that need to be referred to the hospital, at least the presence of this mobile application is the first step in providing health services that are easily accessible for public.

**Key words :** Mobile Application, Health Application.

## 1. INTRODUCTION

Indonesia is the fourth most populous country in the world [1], with a dense population certainly has the potential risk in various fields, one of them is the health sector. During the Covid19 pandemic until this article was written at the end of May 2020, there were 19,189 total Covid19 sufferers, 4,575 people recovered and 1,242 died and this number is predicted to continue to increase in the following days. The total number of positive confirmed souls has a percentage of 0.007% of the total population of Indonesia, amounting to 273,523,615 [2], a small percentage but actually the number of positive confirmed souls cannot be called small.

The increased potential for epidemics of infectious and non-communicable diseases coupled with a shortage of health workers is a challenge in achieving health-related Millennium

Development Goals [3]. In the current pandemic Covid19, people began to limit themselves to traveling or limit themselves to interact with others, they prefer to run activities inside the house by working from home.

Many healthcare organizations today maintain an enterprise data warehouse with large volumes of clinical data [4], [5] and patient registration is a very important part of the health information system [6]. In the current condition, information technology plays an important role in helping the activities of human life, in Indonesia the growth of information technology literacy has been growing rapidly [7]. Many people have used information technology to facilitate the activities they want to do, such as shopping through ecommerce applications, in terms of health consultations that they do using free health consultation applications installed on their phones.

The introduction of information technology in the field of health, especially health consultation services via smartphones makes health services easy and affordable [8], has many smartphone-based health applications has been developed and connected between doctors and patients [9], and the use of this application is very helpful for many people because it leads to two-way communication between doctors and patients and can help improve the quality of overall health services [10].

## 2. METHOD

### 2.1 Questioner

Research data is an important instrument in research, in this study research data were collected through questions, questionnaire is a way to collect quantitative primary data [11], with the aim to find out how much community involvement in utilizing information technology to obtain information about health and online consultation. The questionnaire was distributed randomly in the Jakarta area with an age range of 18-60 years with male and female genders.

### 2.2 Business Role

Business roles are compiled based on the results of literature studies and questionnaires, to describe the rules of the game in the business that will be run through the functionality of the system to be developed.

### 2.3 System Flowchart

System flowchart describes the logical design of the initial study for the development of a system [12], flowchart can also improve the quality of research [13], the flowchart system is represented by symbols such as rectangles and arrows that indicate the flow of the process.

## 2.4 Architecture Design

Designing software for distributed teams requires careful selection of practices that support understanding and adherence to a defined architecture [14], architecture design in this study illustrates the relationship between entities outside the system and the system.

## 2.5 Mockup Interface

The use of a user interface Mockup can reduce error rates and help speed up the development phase of the system [15]. In software development, mockup interfaces are generally made based on the functionality of the system to be built.

## 3. RESULTS AND DISCUSSION

### 3.1 Data Collection Results

#### 3.1.1 Respondent

Total respondents 146 respondents, from the characteristics of respondents based on gender obtained a total of male respondents by 43.83% and women 56.16%, based on age found that the most total respondents in the age range 36-55 years as much as 58.90% of the total respondents. Characteristics of respondents shown in Table 1.

**Table 1:** Characteristics of Respondents

		Respondent Total	Percentage
Gender	Male	64	43.83%
	Female	82	56.16%
Age	18 - 23	19	13.01%
	24 - 35	32	21.92%
	36 - 55	86	58.90%
	>= 56	9	6.16%

#### 3.1.2 Questioner Results

Available 5 questions in the questionnaire distributed to 146 respondents with results as shown in table 2.

### 3.2 Business Role

Mobile Application that will be developed has a function as an online consultation media in the field of health, this application aims to provide a complete and reliable solution to meet the health needs of the people of Indonesia by connecting the public with doctor's specialists in their field.

People who want to consult their health can choose a specialist doctor's in accordance with the symptoms experienced, the

public can also search the near doctors in their location, other features are about information health and drug purchases at partner outlets registered in the application.

#### 3.2.1 Application User

Based on the functions available on the system, there are 4 types of application users:

1. People in the public  
Everyone who wants to consult, buy drugs or just looking for information about health
2. Doctor  
Every doctor who wants to provide services online consultation
3. Partner  
It is a trader's medicines and medical equipment
4. User Administrator  
Individuals who are given the authority to control data on the system.

#### 3.2.2 Health Services Offered

There are 3 health services offered in this application:

1. Health consultation  
At this service, the public can conduct online health consultations with doctor's specialist who have registered on the application, if required further consultations offline can be done with the agreement of schedule, people can choose doctors based on symptoms of health problems experienced and also based on near location of their existence.
2. Health information  
In this service, people can read information about health by category groups that are updated from reliable sources.
3. Purchase of medicines and medical equipment  
In this service, people can buy drugs or medical equipment from partners who have registered on the application, payment can be made by transfer to the application manager account number and then be forwarded to the partner account with a profit sharing system for the drugs that have been sold.

#### 3.2.3 Giving the Point

Every transaction purchases drugs and medical equipment, on the buyer's account will get points, points can be exchanged for souvenirs provided by the application manager.

#### 3.2.4 Partner Involvement

The role of partners in the application is to provide needed medicines and medical equipment by the community.

#### 3.2.5 System Flowchart

System Flowchart describes the flow of procedures or functionality that is in the application developed, system users are required to have an account to use it. Overall system flowchart is illustrated in Figure 1.

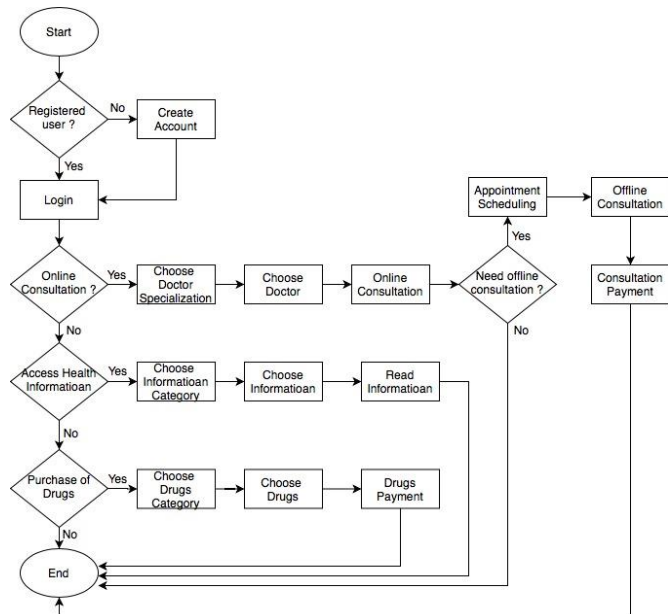


Figure 1: System Flowchart

The first step to using this application, the user is required have an account to login into application, after successfully login into application there are 3 health service options menus available. The online consultation service menu is for users who want to consult a specialist in their field, health information service menu is information about health and the medicine purchase menu is a list of drugs available for purchase.

programming interface to access data in the database, the architectural design is illustrated in Figure 2.

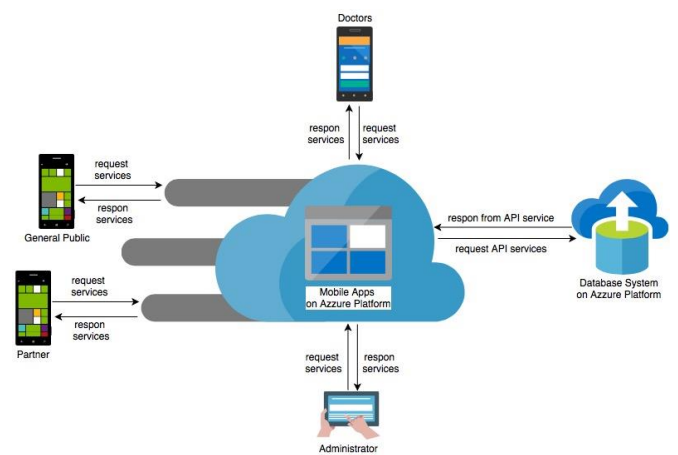


Figure 2: Architecture Design Mobile Application for Health Consultation

### 3.2.7 Interface Application

The application interface is presented as an illustration of the application to be developed shown in Figure 3, designed in accordance with the functionality of the application to be developed by paying attention to aspects of user convenience and comfort.

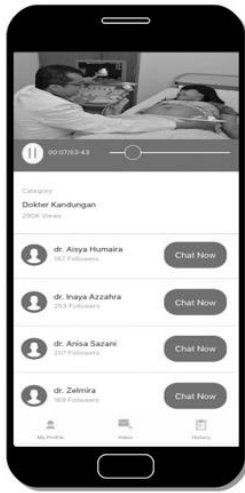
Table 2: Respondents responses to questions

No	Question	Respondent total to Answers			
		STS	TS	S	SS
		(1)	(2)	(3)	(4)
1	Do you care about personal hygiene and the environment?	0	4	125	17
2	Did you do a personal health check at a health facility if you are sick?	1	5	27	113
3	Are you accustomed to finding information about health from online media?	3	27	98	18
4	Do you know of an application for online health consultation?	3	48	91	4
5	Do you want a consultation on health problems with the help of technology?	0	2	114	30

### 3.2.6 Architecture Design

There are 4 users as entities outside the system connected to this application, this application uses cloud computing technology using azure platform, use the application





**Figure 3:** Interface Application

#### 4. CONCLUSION

In the condition of pandemic Covid19 health is a major concern for everyone, this research presents a design of the application of information technology in helping the public to consult health problems in easy way to do. Based on the results of the questionnaire most people have realized the importance of maintaining health, avoiding physical contact with others and restricting themselves to travel, this becomes a new habit for those who change all patterns of habits in the past.

In the application design, there are 3 health services can be utilized by application users, that is online consultations, reading information about health and buying medicines and health equipment, the existence of this application is expected to help the public to consult health online.

In the future, the business process needs to involve the government so that a comprehensive health data ecosystem will be created that can benefit all parties.

#### ACKNOWLEDGEMENT

The authors would like thanks to Rector of Trilogi University, has been support this research. In addition, the authors also wish thanks to the students of Information System Department, who had given their full cooperation to ensure the success of this research.

#### REFERENCES

1. World Bank, **Population 2018**, available at <https://databank.worldbank.org/data/download/POP.pdf>
2. Worldometers 2020. **Countries in the world by population**. available at <https://www.worldometers.info/world-population/population-by-country>
3. S. Davey, A. Davey, **Mobile-health technology: Can it Strengthen and improve public health systems of other developing countries as per Indian strategies? A systematic review of the literature**, *International Journal of Medical and Public Health*, vol. 4, no. 1, pp. 40-45, Jan-Mar 2014.

4. F. E. Edward, E. M. Carl, E. D. Laura, **Data warehousing in an integrated health system: building the business case**, in *Proceedings of the 1st ACM international workshop on data warehousing and OLAP*. Washington, 1998.
5. E. Del Hoyo, D. Lees, **The use of data warehouses in the healthcare sector**, *Health Information Journal*, vol. 8, no. 1, pp. 43-46, 2002.
6. S. F. Tan, F. Ahmedy, S. Y. The, **Designing and Developing Predictive Rehabilitation Management System for Patient Registry in Northern Borneo**, *International Journal of Advanced Trends in Computer Science and Engineering*, vol. 8, no. 6, pp. 3588-3595, 2019.
7. A. A. Pinem, *et al*, **Designing a health referral mobile application for high-mobility end users in Indonesia**, *Heliyon*, vol. 6, no. 1, pp. 1-8, 2020.
8. N. Nabila, I. Mehree, R. Afrin, I. Sherina, **Mobile Health Services: A New Paradigm for Health Care Systems**, *International Journal of Asian Business and Information Management*, vol. 6, no. 1, pp. 1-17, 2015.
9. S. Singh, P. Khadamkar, M. Kumar, V. Maramwar, **Healthcare Services Using Android Devices**, *The International Journal of Engineering and Science*, vol. 3, no. 4, pp. 41-45, 2014.
10. Z. Nizar, M. M. Mohammad, and S. Alaa, **Mobile Healthcare System**, in *Proceeding International Conference for Young Researchers in Informatics, Mathematics and Engineering*, Catania, Italy, 2016, vol. 1712, pp. 13-18.
11. R. Roopa, M. S. Rani, **Questionnaire Designing for a Survey**, *The Journal of Indian Orthodontic Society*, vol. 46, no. 4, pp. 273-277, 2012.
12. M. D. Mohd Amran, S. Nur Afiqah, K. Rahimah, A. W. Mohamad Ikbar, S. A. Khairanum, **Development of Logical Design Flowchart for Computerized System of Problem Solving and Improvement Procedure**, *International Journal of Advanced Trends in Computer Science and Engineering*, vol. 9, no. 1, pp. 400-407, 2020.
13. B. Jefferson, H. Rich, M. Emily, **Research Pearls: Checklists and Flowcharts to Improve Research Quality**, *The Journal of Arthroscopic and Related Surgery*, vol. 36, no. 7, pp. 2030-2038, 2020.
14. S. K. Outi, R. Ita, B. Sarah, **Software architecture design in global software development: An empirical study**, *Journal of Systems and Software*, vol. 158, pp. 1-15, 2019.
15. J. M. Rivero, *et al*, **Improving Mockup-Based Requirement Specification with End-User Annotations**, *Information and Software Technology*, vol. 56, no. 6, pp. 670-687, 2014.